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PASTEUR AT HOME.

M. PASTEUR'S persistency in claiming to have discovered an almost infallible remedy for the prevention of hydrophobia induced the Rev. R. A. Chudleigh and some friends of his to urge me to visit Paris and interview the famous French chemist, and as Mr. Chudleigh generously provided the means, off I set. My visit took place at the time when Pasteur's treatment against hydrophobia was attracting most attention. My object was not to take a patient in danger or supposed danger of hydrophobia, nor to collect statistics, still less to strengthen any theory : it was simply to see what was actually taking place—to observe the man and his assistants, and to report upon and to converse with the people whom I found in his rooms ; in short, I was only to be a spectator, nothing more, though my long experience of hospitals and private medical practice gave me some claim to rank as a trained observer, less likely than some other inquirers to be led astray by prejudice and falsehood.

The character of hydrophobia invests it with an interest not often extended to diseases which destroy a thousand times as many lives. There is something so dreadful in the thought that the bite of a pet dog or the inoculation of a scratch with the saliva of a favourite cat *may* be the first stage in a disease hopeless in its character and peculiarly distressing to witness, that new remedies are examined with a patience and hopefulness not often shown in other and really far more important cases. The great uncertainty as to whether a particular bite will end in hydrophobia, and the chance that even when the dog or cat is undeniably rabid, the sufferer may escape all evil consequences, make investigations as to the value of any new treatment peculiarly perplexing and difficult.

Some preliminary statements about hydrophobia, a subject on which the public are often ill-informed, cannot be but in place here. It is, then, a disease of great rarity, and not always of very clear origin. Many medical men pass a long and busy life and never see a case ; others see one or two. On this point the experience of the late Dr. Austin Flint, one of the ablest and most eminent physicians America

has ever produced, is of special value : he had only seen two cases, and the reader must remember that Dr. Austin Flint, from his eminence and metropolitan position, was of all American medical men one of the most likely to have opportunities of seeing cases.

"Dr. Carter of Shipley," says an able writer, "was one of the many men escorting patients to the Rue d'Ulm with whom I conversed on what goes on there. He has had *unusual experience* in hydrophobia, having treated eight cases, one of which was caused by the scratch of a cat. He knew a death from rabies—or at least a death with every rabid symptom—from the bite of a dog never ill, and yet alive."

We may fairly assume that hydrophobia *may* occur once in many millions of cases of other diseases. Some practitioners doubt its very existence, though the majority believe it to be a real disease. It is generally supposed to result from the bite or scratch of a rabid animal ; in other words, the saliva of a cat, dog, badger, wolf, or fox is introduced through the skin by a bite or scratch, and passing into the general current of the circulation, leads to singular changes and nearly certain death. The rapidity with which the virus enters the circulation is such that local applications are probably useless, and the faith in caustics seems only another time-honoured superstition. Some authorities hold that the virus may remain latent in the cicatrix of the wound for days, months, even years, before being taken up by the system ; others treat such theories, and probably with reason, as old wives' tales. Dr. Austin Flint argued that rabies did not occur very *soon* after the bite, nor very *long after* ; in other words, in cases of illness commencing directly after the bite, or very long after, there was no reason to believe the complaint to be hydrophobia ; from ten days to a year fairly covered the extreme limits of incubation, and in all probability, when the disease appeared some years after a severe bite, which the patient had not forgotten, he had been subsequently inoculated by an infected animal. Again, granting the existence of the disease—and the evidence is sufficiently strong—and admitting that it is caused by the virus of an infected animal, much remains ; and to this the reader's close attention must be directed. Not one dog in a thousand—not one, perhaps, in ten thousand—biting human beings is rabid ; and as many people, bitten by a rabid animal, are proof against the poison, and, as in a large proportion, the fangs are wiped clean by the clothes or skin in their passage into the subcutaneous tissues, the percentage of people bitten by rabid animals, ultimately becoming rabid, is very small. Still more to complicate matters, many nervous diseases simulate hydrophobia, or are liable to be mistaken for it. Many animals

suffering from epilepsy and other nervous complaints are hastily assumed to have rabies. Hot weather has nothing to do with the frequency or virulence of the disease, either in man or beast ; though hot weather is vulgarly supposed to have much to do with bringing it on. As the possibility of developing hydrophobia is present in the minds of nearly all people bitten by animals, deaths from terror are not unknown, and cases occur of what are called pseudo-hydrophobia. When the dead body of a dog is carefully examined by competent investigators, there are no certain signs by which hydrophobia can be recognised. The appearance of the corpse, and the presence in the stomach of straw, bits of wood, and other such matters is not conclusive. In many instances, too, the sufferer promptly sucks the wound, and may thus remove the virus, and in a still larger proportion a medical man, a chemist, or some neighbour applies acid, vinegar, carbolic acid, a hot iron, nitrate of silver, or some other potent agent, and so may destroy the virus. The severity of the wound, though adding danger of another kind, cannot have much to do with increasing the risk of hydrophobia, as the most minute particle of the poison introduced into the system acts as a ferment, and in some inexplicable fashion sets up destructive processes terminating in death. Nor has the locality of the bite anything to do with increasing or diminishing the risk ; the introduction of the virus is the one important matter, not the amount injected, nor the region wounded.

Around Pasteur a fierce vivisection contest has raged. In many circles he is regarded as the incarnation of cruelty and inhumanity, and it has seemed to many of his opponents that his discomfiture, or rather that of his anti-hydrophobic treatment, would be the death-knell of experiments on animals ; on the other hand, many scientific men have rallied around him, apparently expecting that his triumph would for ever set at rest the anti-vivisection agitation. The difficulty, therefore, of being impartial, that is, judicial in the tone of my article and in the investigations which led to it, is obvious. Had I been asked to write a paper on the architectural beauties of Paris, its superb churches and ancient cathedrals, its picture galleries, its beautiful avenues and its transparent summer atmosphere, how quickly would my pen run on, how rapid would be the flow of words ! but the cold-blooded habits of the scientific investigator awaken no response in my breast, and to deal with scientific details, to balance facts—that was a task I was ill fitted for.

Unfortunately in all respects, unfortunately for his reputation in many circles, still more unhappily for the hecatombs of innocent

victims whom he has slaughtered—sacrificed to what he supposed to be cruel necessity—Pasteur's connection with vivisection has surrounded any investigation of the man and his labours with complications of such a character that it is almost impossible to dismiss those terrible experiments from the mind, although very many Englishmen are not opposed to vivisection.

Many of our most enlightened countrymen would endorse the following passage on vivisection from a reply once made by Charles Darwin to Professor Lankester: "You ask about my opinion on vivisection: I quite agree that it is justifiable for real investigations on physiology, but not for mere damnable and detestable curiosity. It is a subject which makes me sick with horror, so I will not say another word about it, else I shall not sleep to-night." On the same subject Sir J. Fayrer says of Darwin: "He was a man eminently fond of animals, and tender to them; he would not knowingly have inflicted pain on a living creature; but he entertained the strongest opinion that to prohibit experiments on living animals would be to put a stop to the knowledge of and the remedies for pain and disease." Charles Darwin's views are much those of most medical practitioners; they regard vivisection as a dreadful necessity; but expect much from it, and look too hopefully on its supposed past triumphs. Few English medical men practise it; still fewer feel any satisfaction in it. Whether justifiable or not is not now the question, but I am sure of this, that the victory or discomfiture of Pasteur will not dispose of the matter: the conquerors and the conquered in that field will be ready for other conflicts as embittered and perennial.

Perhaps I may be pardoned for a brief digression here. A great number of people object to vivisection, but think that it has led to memorable results; they are prepared to attend anti-vivisection meetings, to sign petitions, and to give a qualified assent to prohibitory measures; they object to unnecessary experiments, ask for regulation, and, in short, waver from year's end to year's end: these persons form the vast majority of the educated classes. We have also a handful, who detest orthodox medical practitioners and abominate vivisection, but it is hard to discriminate between their hatred of doctors, their disbelief in science, and their horror of vivisection. Again, we have a group, who do not believe in vivisection at all, nor in anything else, but love to be in opposition, and so oppose Pasteur, physiology, physic—legitimate and illegitimate—and science. Still, again, we have a few thoughtful, generous, upright people, among whom I should place my accomplished friend Mr. Chudleigh,

who honour science and self-denying medical practitioners, and yet shudder at vivisection, questioning its utility, emphatically denying its morality, and arguing with much show of reason that, even granting that vivisection occasionally leads to discoveries, those discoveries might have been as surely obtained by observations on man, and that the violent methods of the vivisectionist are not of value, for they have nothing in common with the more gradual operations of nature. Most people, however, take a somewhat cold-blooded view of the subject ; they do not wish to be present at experiments on living animals, and rather dislike anyone who performs them ; at the same time they would gladly profit by any discoveries made by such means, however morally indefensible. Pasteur's treatment they do not approve, nor do they condemn it, for they know too little of the matter to form an opinion of any value : they drift hither and thither, and the last expression of opinion in favour of it or against it is the one that, for the moment, influences them. Candidly speaking, I am myself still unable to form a positive opinion as to the value of Pasteur's treatment : my prejudices, as some would call them, are decidedly against its value, but in view of the irreconcilable conflict of opinion among the keenest observers I am still compelled to suspend judgment. It must be perfectly obvious to any mathematical mind that if Pasteur's treatment is, in some cases, useful, he is on the high road to still more important discoveries, but that if his inoculations have, as some high authorities assert, no more to do with hydrophobia than with the lost books of Livy, those inoculations are totally useless. Strange to say, I sometimes meet with highly educated people, often university men of standing too, who admit that they do not believe that Pasteur has cured or prevented a single case of the disease, the evidence of failure is too overwhelming, but they go on to say that perhaps some day his labours will lead to useful results. Such a position I cannot comprehend. To oppose is logical, and the opposition may be on physiological or on moral grounds, or he may be credited with having made great discoveries, but to deny that he has done anything in the matter, and yet to look for great results hereafter, is a confusion of ideas that makes me despair.

The rarity of hydrophobia is far greater than most persons would believe, and, at the risk of wearisome repetition, I must dwell upon it, for on it depends the chief difficulty in accepting Pasteur's alleged triumphs. Perhaps a dozen deaths from hydrophobia are on the average registered in the United Kingdom every year, and other countries hardly show a longer death-roll. Professor F. Ray

Lankester says as follows: "In England as many as thirty-six persons died from the disease in 1866; in France 288 persons were its victims in 1858; and in Prussia and Austria it is more frequent than in England." Bearing on this matter—the small percentage of rabid dogs among all the animals biting human beings—the official letter addressed by the Commissioner of Police of the Metropolis to the Secretary of the Dogs' Home is important. It is dated July 1, 1886. In it occur these significant words: "No less than 180 police officers have been bitten by dogs since last November. Two were sent to M. Pasteur to Paris, to be treated some weeks since; and one police constable, bitten by a dog certified to be mad, is on his way to Paris to-night." These dogs were the neglected, forlorn creatures infesting the streets, and they are oftener the victims of hydrophobia than other animals, and yet not one of the 180 constables whom they bit seems to have developed hydrophobia, or to have died from the bite, while only three were sent away to undergo Pasteur's treatment. I need hardly add that not one of these three might ever have developed hydrophobia, nor is it certain that the dogs that bit them were in a dangerous condition.

Having at one time known Sir William Jenner well, and having in my student days at University College formed a very exalted opinion of his great ability and singular capacity, I wrote asking him, as one of the Royal Commissioners for the investigation of Pasteur's treatment, his frank opinion. Sir William at once replied:—

I am sorry that I am unable to afford you any assistance in the matter that you bring before me: I am not sufficiently acquainted with all the facts, nor do I think the facts are yet numerous or definite enough for anyone to form a conclusion. I think the question should still be regarded as *sub judice*. I am not in any way prejudiced—my mind is quite open upon the subject. I assisted in sending over two cases to Paris, and they have both done very well, but I am not at all sure that the dogs that bit them were mad: they were said to be.

This letter is dated August 4, 1886, but I am not aware that the ex-President of the Royal College of Physicians has changed his mind since.

Dr. Jacob, of Leeds, a rising physician, has suggested that Pasteur's experiments should be repeated by an independent authority, for at present there are great difficulties in accepting his cure as proved. If among 600 or more patients treated at Paris 100 had been bitten by mad dogs, he would expect about six to become affected with hydrophobia, and if no cases of hydrophobia occurred among them, that would be a strong presumption in Pasteur's favour

but not an absolute proof. One might fancy that Pasteur's experiments had been on a scale sufficiently extensive to satisfy the most exacting requirements.

I cannot get the most recent figures, but two years ago I was positively assured that at least 126 deaths had followed the preventive treatment, and an eminent writer turned the tables completely round on Pasteur, and asserted that the injection would in many cases cause active disease and spread hydrophobia far and wide, much as inoculation for small-pox carried that terrible disease into all parts of Europe and so largely augmented the death-rate from small-pox that it had to be declared illegal. Mr. Chudleigh has, however, come to my assistance, and has given me the most recent information on which he can lay his hands.

From this it appears that up to the end of October 1889, M. Pasteur claimed to have treated upwards of 9,000 persons, and the deaths following his treatment had then reached 183, although it is not impossible that many others had occurred of which no particulars had reached the public. True, this necrology rests in the main on the authority of the Anti-Vivisection Society, and it might be open to suspicion as coming from a hostile quarter; but, as a set-off to this objection, Professor Thomas Lauder Brunton, whose eminence in the scientific and medical world is only surpassed by his distinction as an apostle of vivisection, frankly admitted before the Lords' Committee on Rabies in Dogs that this table *was accurate, and that it seemed to him to have been drawn up with extreme care*. So far good. Now 9,000 cases of bites from rabid dogs in four years, in France mainly, seems a long list of casualties, and the more thoroughly we examine the figures the greater our difficulties. If nearly all these cases were genuine bites from rabid dogs—and if we accept Professor Ray Lankester's estimate, that 16 per cent. of the sufferers would die of hydrophobia—Pasteur saved at least 1,300 lives, making allowance, that is, for the 183 recorded deaths; but it is appalling to be told that but for his interposition the annual death-rate from hydrophobia would have stood from 200 to 300 higher in France alone than it actually did. Is there any evidence for believing anything so improbable? On the other hand, assuming that a majority of the sufferers had not been bitten by rabid animals, and putting the death-rate at 5 per cent. in those who had—an estimate finding favour with many authorities of repute—then 183 deaths among, say, 4,000 cases, would seem to show that the anti-rabic treatment was only a gigantic imposture.

"It is rather a curious comment," says the *British Medical*

Journal of July 10, 1886, on the letter of Sir Charles Warren with regard to the multiplicity of rabid dogs, "that the Hydrophobia Commission is at present retarded in its investigations by the difficulty of obtaining a rabid dog with which to test the efficacy of the protection afforded by inoculation."

Though I have seen hundreds of dog-bites, I have never seen a case of hydrophobia, and I have not known more than two or three medical men who had seen cases. This, again, proves the extreme rarity of the disease and the improbability that thousands of persons should be bitten in the course of three or four years by rabid animals in Europe alone, though it is conceivable that in a few weeks hundreds might fancy that the animals which had bitten or scratched them were rabid. Yet of these hundreds of sufferers not one might, even without any treatment, become rabid. It is sufficiently common for people to fancy that any dog chancing to bite them is mad, when the wonder is that more people are not bitten by the poor, wretched little creatures that are every day worried, beaten, and frightened, and in their terror snap at the nearest tormentor.

No treatment for hydrophobia is in medical circles regarded with favour, although the most potent remedies have been repeatedly resorted to; not one has stood the test of scientific inquiries, nor received the support of medical practitioners, except of the particular group who had introduced it, and yet it is instructive how doubly industrious the inventors of infallible methods of treatment for the cure of hydrophobia have been of late. Without a particle of evidence, we are bewildered by entreaties to resort to a cure called Buisson's, which consists in being parboiled; this, with the addition of injections of pilocarpine, is said to cure all sufferers who do not die.

So much has been published about M. Pasteur, and his methods of treatment are so widely known, that all I could attempt in my visits to his rooms was to observe curiously anything I saw, and describe it as accurately as possible. Hurried impressions from brief interviews with busy men are particularly liable to lead to false impressions, and may be ridiculed as valueless or actually misleading, so that I only claim to have endeavoured to give a plain and unvarnished narrative of what I saw and of the conversations I heard. Surely many readers will exclaim, "No easier task was ever given an investigator." Is this really so? Is it not rather true that the rarest qualifications are needed? To observe demands the keenest vision, the most retentive memory, the soundest judgment. Why, the very appearance of a distinguished man, and surely that is a simple matter, is not given as the same by any three different highly trained

observers. A charming and powerful writer in the *National Review* of August 1886, describes Pasteur's eyes as "dark blue," but in the *Fortnightly* of July 1886, G. M. Crawford twice says his eyes are "topaz-yellow." Colour-blindness somewhere! Contrast with this uncertainty as to the colour of the eyes, the complexion; in one case said to be "bronzed," in another "pale"! As for his stature there is the same uncertainty, and one person saw only a short, stout, elderly man, where another beheld the "figure of a soldier" or a majestic bearing. Fortunately, no one represents Pasteur as a giant, that would have been too great a flight of the imagination.

During the summer of 1886, at least three articles of great merit appeared on "Pasteur and Hydrophobia": one in the *Nineteenth Century*, from the pen of Professor E. Ray Lankester, was couched in terms so laudatory that they must have brought a deep blush to the cheek of the French *savant*, who surely had never before been credited with a more brilliant list of discoveries and triumphs; a second, in the *Fortnightly*, was much less complimentary, and perhaps erred in ascribing to Pasteur and his assistants the rôle of charlatans if not of knaves, while the author hinted that the disease itself might only exist in the mind of nervous sufferers; the third article, in the *National Review*, approached the subject differently; the author was positively awe-struck by the genius of Pasteur, and fully accepted his discoveries as proved. She made no claim to be regarded as competent to judge of the merits of the case. There is something positively charming in the frankness with which this talented authoress says:

As I left M. Pasteur I ventured to say to him that I had greatly known and greatly beloved the man who had conquered pain by chloroform, and that I should always be grateful to have met the *savant* who was about to rid the world of one of its most cruel scourges. As he lifted his eyes to my face, and replied, "Madam, you are really very good to speak thus to me," I noticed their peculiar expression. They seemed to look and yet not to see, and I asked myself—Was this only the effect of the day's fatigue, or of that incessant use of the microscope which had brought on his illness? His figure remains graven on the memory. In the middle of Paris, of the Paris which stews for ever in the juice of her own democratic passions, and of her own godless and clandestine joys, he seemed to stand out a high priest of Nature. Nor is he a mere scientist searching for knowledge under the daylight of his intelligence. Science in her gravest mood tends ever to utility, and Pasteur seeks for the truth that is alone worth knowing—how to be accurately and practically useful to mankind.

What a eulogium!—"the man about to rid the world of one of its most cruel scourges." Professor Lankester's opinion of Pasteur is also worth reading.

M. Pasteur is no ordinary man : he is one of the rare individuals who must be described by the term *genius*. Having commenced his scientific career, and attained great distinction as a chemist, M. Pasteur was led by his study of the chemical process of fermentation to give his attention to the phenomena of disease in living bodies resembling fermentation. Owing to a singular and fortunate mental characteristic, he has been able not merely to pursue a rigid path of investigation dictated by the logical or natural connection of the phenomena investigated, but deliberately to select for inquiry matter of the most profound importance to the community, and to bring his inquiries to a successful practical issue in a large number of instances. Thus he has saved the silkworm industry of France and Italy from destruction, he has taught the French wine makers to quickly mature their wine ; he has effected an enormous improvement and economy in the manufacture of beer, he has rescued the sheep and cattle of Europe from the fatal disease Anthrax, and it is probable—he would not himself assert that it is at present more than probable—that he has rendered hydrophobia a thing of the past. The discoveries made by this remarkable man would have rendered him, had he patented their application and disposed of them according to commercial principles, the richest man in the world. They represent a gain of some millions sterling annually to the community. It is right for those who desire that increased support to scientific investigation should be afforded by the governments of civilised states, to point with emphasis to the definite ability and pecuniary value of M. Pasteur's work, because it is only in rare instances that the discovery of new knowledge and the application of that knowledge go hand in hand. So little was hydrophobia understood, and to so small an extent had it been studied previously to M. Pasteur's investigations, that it was regarded by a certain number of highly competent physicians and physiologists, although this was not the general view, as a condition of the nervous system brought about by the infliction of a punctured inflammatory wound, in which the action of a specific virus or poison took no part : it was in fact by some physicians regarded as a variety of lock-jaw, or tetanus. Death results from spasm of the respiratory muscles, the patient dies asphyxiated. The desire to bite is rare. The disease invariably, as in the dog and other animals, terminates fatally, and usually between the second and fifth day after the symptoms have been first observed, though it sometimes runs on to the ninth day.

To form a right judgment as to Pasteur is not easy. He must be a man of commanding ability, for his name is associated with a long list of brilliant discoveries ; but I have not sufficiently studied his life and works to feel justified in hinting that his merits have been over-estimated, for fame is not easy to get, and such fame as his must have something more solid to rest upon than the extinction of hydrophobia, which, in the face of nearly 200 deaths after his treatment, seems somewhat problematical.

Arrived in Paris, having already introduced myself to Pasteur by some correspondence, I made my way to 14 Rue Vauquelin ; and having passed through a plain wooden door into a narrow paved yard, I found two other doors to my left, and on inquiry was told that they opened into the waiting-room. The sight that met me was

very similar to that in any out-patient room in a large general hospital in England, with this difference, that whereas in an English waiting-room many of the sufferers look very ill and are dirty, depressed and ragged, those in Pasteur's entrance-hall were mostly clean, well dressed and cheerful, and among them were many persons, whether spectators or patients I could not always ascertain, evidently of good social position. Much animated conversation was going on, and people were laughing merrily. At the end of the room, to the left, was a wooden railing separating a smaller room or recess from the larger, and as a large crowd was collected there I made my way to it, and found a young man calling over a list of numbers and names ; with some difficulty I reached the barrier and attracted his attention. I told him who I was, and asked to be taken to M. Pasteur ; the clerk simply pointed to a very short man at his side, wearing a smoking-cap and said : "There is M. Pasteur ; pray speak to him." Accordingly I passed through the gate, and advancing to M. Pasteur handed him my card ; he glanced at it and remarked : "Would you wait till the doctors come ? Pray take a seat in the large room yonder." I passed out again, and waited three-quarters of an hour. All this time names were being called over, and more people were pouring in. I had a singularly favourable opportunity of observing Pasteur in the meantime. He is short, stout, and elderly, with nothing striking in manner or appearance ; he seemed worried, preoccupied, and busy ; he is slightly lame, and his sight is bad, while, like most Frenchmen, according to my experience of them, he is extremely reserved. After a time, on the arrival of the physicians, I passed through the barrier and the small room into a large inner one, where I found many people,—a quiet, orderly, animated, well-dressed throng, a few patients, but the majority visitors or inquirers like myself. One or two assistants marshalled the patients and conducted them to a medical man sitting in a chair ; to the doctor's left was a table, on which were placed a dozen small vessels like custard glasses, containing the virus, a lamp, with a vessel of boiling water over the latter, and a few fine hypodermic syringes. The assistant received the syringe from the doctor, rapidly washed the needle in boiling water, filled the reservoir with virus, and handed it to the doctor, who very expertly injected the contents under the skin of the patient's side. Why M. Pasteur has selected the side of the patient as the right place for the injection is incomprehensible to me ; any part of the body would apparently do equally well ; true, M. Pasteur argues that *the nearer the centre of the circulation the better*, but physiologically, I can see no advantage in this. The operator having

returned the empty syringe to the assistant, the patient passed out through a door behind the surgeon. It is hardly necessary to say that few of the patients felt the prick of the needle, the operation is only a minor one, though children were of course alarmed, and some cried and resisted. This might easily deceive a layman, although a medical man would know how little was meant. The process was rapid, and scores of people came in quickly, were operated on, and passed out. I was struck by the admirable order which prevailed, the calmness and good behaviour of the patients, and the noiselessness and rapidity with which, when the injections were over, they filed out. An English out-patient surgery exhibits more noise and confusion, and less work is done in the same time. As this part of my report will conflict with many of the statements published, I consider it important to remind the reader that there is a vast difference between noise and confusion. To an outsider a review ground, a printing office, a hospital, a large kitchen, and a factory will seem noisy and disorderly, though an expert may be struck by the perfect order and amazing industry prevailing. A little practical knowledge would teach the visitor in Pasteur's rooms that underlying the bustle of activity real work was being done, methodically, promptly, and perfectly.

Two or three of the very few dirty, shoeless people I saw during my stay in France were in the rooms of M. Pasteur, and they were not French.

All this time M. Pasteur was moving about, briefly speaking to his assistants, or addressing a couple of words to strangers. An inner room led out of the large operating one, and there I found a surgeon busily engaged dressing wounds, some of them of great severity. He dexterously removed the dressings, put a little powdered iodoform on the wounds, then a pad of carbolised cotton wool, and a little fine gutta-percha tissue, and finally a gauze bandage over all. This man was large of person, cheerful of countenance, and remarkably rapid in his manipulations. As the patients came up in larger numbers he became more and more busy, and at last he turned to me and said in a quick, decisive way, "Be good enough to dress some of these people"; so I set to work and attended to a few; but how he guessed I was a medical practitioner I cannot tell.

There could be no doubt that a large proportion of the patients had been bitten, and some seriously; a Russian lad had had his right leg so severely lacerated, that a certain proportion of deaths might be expected in 500 such cases of injury. One of the accounts

I have read throws doubt on the *bona fides* of many of the patients, and actually accuses the majority of being arrant impostors ; for such an accusation there is no possible foundation or excuse, though possibly it may be true of a small percentage.

There did not seem any great air of seriousness among the patients and spectators ; indeed I suspect that many looked on the whole thing as a joke ; a small one, it may be, still a joke.

As M. Pasteur invites inquiry and criticism, I suppose that matters could not be altered ; still there was an appearance of something like a *show* in the proceedings and place that would wear away should the laboratory remain open for years. Many of the aristocratic gentlemen and graceful ladies who passed through the rooms were evidently come to look round, just as they might, later in the day, go to a flower show, or a picture gallery.

M. Pasteur was too silent and reserved to get anything out of him. Under such circumstances—the centre of such a throng of inquirers—an English discoverer would have rattled away twenty to the dozen, explaining and enlarging upon everything, and offering all the information he had to give ; not so Pasteur.

The *Fortnightly* of July 1886 says of him :

He is obliging to all in the manner of a kindly, hard-worked man, who has no time to lose in idle talk and empty compliments. His conversation with a new-comer, however important or well introduced, is limited to "How do you do ? What can I do for you ?" this not drily or gruffly ; and on being told that the visitor wants to be inoculated, he says : "Good, go and wait your turn with the others." He asks very few questions, indeed sometimes none, as to how applicants for treatment came to be bitten, and does not like to hear that the dog which inflicted the bite has not been killed. "Dogs suffer so dreadfully when rabid that it is a humane duty to kill them at once." Yet he must know that no diagnosis of rabies is complete unless the dog first dies of that disease. The first thing one notices is that he has the bronzed complexion of a military veteran, and a good deal in the expression of the face of a grave old soldier. The former must have been inherited, as his life has been sedentary, and the latter may possibly be the result in infancy and boyhood of conscious and unconscious imitations of his father—*un brave de la grande armée* until 1816 or thereabouts, when he set up a little tanyard near Dôle, in la Franche-Comté. It is well for those who want to scan the *savant* reading the blue despatches that he sometimes takes off mechanically his black velvet smoking-cap which he ever wears at home and in his laboratory. The "dome of thought, the palace of the soul," shown by its removal, is solidly constructed, spacious, and high, without being arched. A man with such a head could not help making his mark in life. The mind is at ease in a dwelling so spacious. All the lineaments bespeak self-will, and the habit of hard, patient, persevering work. A nose that would be lumpy if shorter, is wrinkled in all directions at the bridge. It is the sort of low nose with a thick, advancing, downward end, semi-*retroussé* and semi-dipping, which one sees in the effigies of antique French warriors, and which Mercié has given to his equestrian

statue in the salon of the Constable de Montmorency. A short scant beard does not hide the massive, fleshy, and yet not heavy outline of the under part of the face. An air of thoughtful gravity pervades the countenance. But there is something of the African feline in the topaz-yellow eyes, which, when the smoking-cap is taken off and the head thrown back, stare right before them at vacancy as if to rest the optic nerves. I have never seen a human being with eyes like Pasteur's; they are sometimes lighted up by flashes of scientific inspiration.

Much of this admirable description agrees fairly well with my own observations.

After a time I got hold of Dr. Grancher, a tall, slight, bald man of forty, extremely able and gentlemanly, and proceeded to cross-examine him, but not successfully, for there must be two parties to a cross-examination—the questioner and the questioned. I tried the *rôle* of the former, but Dr. Grancher was little less unapproachable than his chief. The main point I wanted to clear up was—what proof was there that the people coming to be treated had been bitten by rabid animals. He very quietly answered, “We have none; we cannot investigate all the cases that come here; we assume that the people who come have good reasons for their journey. Some bring a certificate from their doctors; others bring nothing. We prefer certificates from veterinary surgeons, as to the condition of the dog. When,” continued Dr. Grancher, “a dog without obvious cause has bitten three or four people, and subsequently becomes rabid, we have no doubt as to his condition.” So far true, but it would be interesting to find out how often the offending dog is *proved* to become rabid; and, unless I am greatly in error, we should not in England accept the ferocity of a dog as any proof that it was rabid.

Doctor Grancher, through whose medium Pasteur operates, enters and sits down in an arm-chair in the recess of the northern window facing the door. A side light from a western window falls on his face. On his left is a table with ten glasses, containing a substance which looks like starch, but is peptonised gelatine, having in it nine different degrees of tamed virus, and the rapid poison in its pristine strength. No. 1 is the weakest, No. 10 the most potent. The doctor is middle-aged, slender, bald, sandy-haired, self-possessed, pale, has a Mephistophelian profile, and never by any chance says a word to anybody. His air is one of utter indifference. He is merely Pasteur's authorised medical instrument. But under his indifferent manner keen watchfulness peeps out. His hands are in black kid gloves, which on sitting down he carefully examines to see there are no holes. The doctor operates on all—the scrofulous, consumptive, scabby, the healthy, the young, the old, the maiden, the child, the gallant soldier, &c. &c., with the same hypodermic syringe. He does not wash it between the inoculations, or the categories of inoculations. Each patient, on coming up to him, bares his or her abdomen. The ladies have ingenious contrivances to avoid indelicate exhibitions. Nevertheless, some of them reddened like peonies, and others all but cry. Grancher pays no heed to their blushing, nor to their welling-over eyes, and operates as if they were anatomy-room subjects. He takes a bit of

the abdominal flesh between a finger and thumb, drives slantingly down under the skin the needle, and injects. This syringe is an elegant little instrument like a case pencil. There are times when his eye, it seems to those who watch him, expresses scoffing scepticism. It seems to say *Tas d'imbéciles*. He is not in Pasteur's secret. This contemptuous glance may perhaps be explained by the fact that the crowd emits a worse odour than a collection of old and freshly worn shoes. French and Belgian peasants are clean and neat, but lower order Spanish, Portuguese, and Russians are dirty to a loathsome degree. The Kabyles have a passion for clean linen and cold water, and never fail to wash their feet under the tap of the *École Normale*.

This lively *Fortnightly Review* writer contends, it will be noticed, that "Dr. Grancher is not in M. Pasteur's secret." I do not in the least understand what this means. Dr. Grancher seems to me an excellent representative of a large class of medical practitioners; he is employed—whether gratuitously or not I do not know—to do something, in this particular case to carry out subcutaneous injections of virus, and that something he does to the best of his ability; that seems his *rôle*.

At the time of my visit at least 4,000 people had gone to Paris from all parts of Europe and America; but the people are chiefly French; foreigners bear but a small ratio to the whole.

I found many people engaged like myself in making inquiries; with some of these I entered into conversation, and their opinions conflicted very much one with another. For instance, I noticed a very large, gentlemanly man, about sixty—evidently a person of ability and mark. With some hesitation I addressed him, and found him most courteous. He was a Russian physician from Moscow. He had once only seen a case of hydrophobia, and when I commented on the incredible number of rabid dogs that seemed without rhyme or reason to be infesting Europe like one of the plagues of Egypt, he smiled. He appeared to accept the sincerity and good faith of Pasteur as above question, and spoke warmly of his ability as a chemist and of his discoveries in crystallisation; but, as for physiology, he again smiled. On asking the Russian his opinion as to whether there was any value in Pasteur's theories and treatment, he replied oracularly: "Time will show; time has destroyed many great reputations and exposed many pretensions. As for truth, where can we find perfect truth, but with One above, the Source and Fountain of all truth?" This was very true, though it gave me little assistance.

Too much has undoubtedly been made of Pasteur's not being a medical man, and not having studied physiology. I cannot see why highly educated men are necessarily incompetent to judge, and often

correctly and impartially, of the merits of men and things outside their daily work. The question is not—Is Pasteur a doctor and a physiologist? But—Has he the intellectual qualifications for mastering the subject he has taken in hand? Can he sift and weigh evidence? Is he unprejudiced? Is his first and last aim the love of truth and the good of mankind? These questions I leave others to answer, though there will hardly be two opinions as to his ability. Most medical men are not original investigators, and few, however well-qualified as regards professional education and the possession of diplomas, are competent to discover or report upon new truths, and Pasteur might easily be more competent in this respect than most successful and skilful practitioners.

Pasteur's keenness of observation and retentiveness of memory did not impress me as remarkable. The last time I saw him before leaving Paris, when, wishing him good-bye, he looked at me absently and said: "You, you have not then been bitten?" "Many times," I replied, "but not of late, nor by a mad dog." Still even of this I will not make much. Pasteur must be a man of remarkable acumen and power, although he may not favourably impress all strangers. At the same time I have known many eminent men, whose writings and achievements showed them to be geniuses, who did not convey even to intimate friends the impression of conspicuous ability.

On my second morning in the rooms matters went on much the same. I noticed a dark man of fifty, whom I cross-examined. He was a physician from Cairo, sent to Paris to investigate the matter. He was very reticent as to Pasteurism, though he accounted for the large number of patients from their being drawn from a vast area, which did not agree with my own observations and inquiries. The Egyptian physician was clever, lively, and intelligent. Among the patients were two foreign women—one tall, the other short, both singularly handsome. "What are those people?" I inquired. "One," he replied, "is an Arab; the other I don't know." The short woman whom he had called an Arab heard him, and politely begged his pardon, disclaiming any Arab blood. She and her tall companion were Spaniards—from Arragon, I think. "Yes, but of Arab type," the physician retorted. "Don't you know that the Arabs ruled Spain for 700 years?" The woman laughed, but doubted her Arab ancestry, or the Arab rule of Spain, I don't know which.

Among the visitors there was another tall man, with gold-rimmed spectacles. I put him through a long cross-examination; he was a Brazilian physician, investigating the subject preparatory to opening a similar institute at Rio. It was quite refreshing at last to meet

with a believer in Pasteur ; he was convinced that the treatment was infallible, and the deaths he got over very comfortably. Some were from the severity of the wounds, other people did not come soon enough, and some deaths were from other complaints ; that was his explanation.

One morning I heard M. Pasteur speak to a man, evidently a stranger, perhaps a foreigner. He had not brought a medical certificate, and had been previously ordered to get one from his doctor, who lived at some distance. "Telegraph at once," said Pasteur peremptorily ; "we *must* have certificates and proofs whenever we can get them."

There is little to add. Of Pasteur's kindness of heart, or rather of his affection for children, there is no doubt. "He is in ready sympathy with children. The moment a little one sobs or whimpers in go his fingers into his waistcoat fob and out comes a silver coin, which is slipped, with the accompaniment of pats on the back and head, into the young thing's hand. This is done spontaneously, and from pure good nature."

M. Pasteur's own evident faith in what was going on—I mean in the value of the treatment—I could not possibly doubt ; nor could I question in one sense his humanity ; he seemed passionately fond of children, and any little child always attracted his attention. One of the doctors, the large jovial man, was injecting the virus into a little boy and the latter resisted and screamed. The slight disturbance attracted M. Pasteur's notice ; he hurried up : "What are you doing?" he exclaimed sharply. "Nothing," replied the doctor ; "the little boy saw the instrument and was frightened, that is all." Again, a second child cried, when M. Pasteur once more came up and said, "Ah, my child, it is all over." Once more, a little girl was rather noisy, when he hurried to the spot and said in a tone of real concern, "*Souviens-toi, ma petite, que si on t'a fait du mal c'est pour ton bien, mon enfant.*" Another child he soothed and comforted, giving it a piece of money. I saw one of the medical men kissing a little child he was going to attend to. I apologise for mentioning these trivial matters, but I am bound to be candid in my statements, and some persons have represented Pasteur and his assistants as monsters of cruelty. But I must remind the reader that professions and practice have not always much in common. The most indefatigable in their attendance at church, and in their observance of religious forms, are unfortunately sometimes those who show least of the true spirit of the Master ; the roughest in appearance are sometimes the kindest and gentlest ; and the smoothest spoken have occasionally the hardest

hearts. A friend of mine, who would not be considered strictly orthodox, is of all the men whom I know the one who seems best to enter into and to understand the spirit of the Master ; another friend, a most enthusiastic sportsman, who thinks little of human life, is the one whose tender love of animals and birds has most impressed me. So while M. Pasteur and his assistants may be dead to all feeling for animals—at least towards those they are going to vivisect—they may feel deep love for young children, and be ready to help and soothe them. Having always regarded vivisection with undisguised aversion, I felt greater curiosity than common to see a man whose fame as a vivisector is world-wide, but during my conversations with him I heard nothing of those terrible and repeated experiments that have aroused so much horror in many hearts. “Pasteur is happy in his married life, happy in the marriage of his daughter to the M. Valéry-Radot who has written such a charming “*Life of a Savant* by an Ignoramus,” and happy in the company of a grandchild whom Barnet has painted standing beside him, the *savant's* hand half-hidden among the girl's clustering curls. Because of his experiments on animals he was once reproached with cruelty. “Never,” he replied, “*never* in my life have I taken the life of an animal for sport, but when it is a question of my experiments, I claim the right to make them ; I am deterred by no scruples !”

The public interest in the subject declined for a time, when the death of Lord Doneraile of hydrophobia following the bite of a tame fox reopened, as from the rank of the sufferer it could hardly fail to do, the whole question of Pasteurism, and as the case was typical of a large class I will relate it. Lord Doneraile was an elderly nobleman, of rather quiet country habits, and very fond of dogs. He was bitten by a tame fox, and soon after the latter became rabid. Of course Lord Doneraile was a good deal alarmed, and without delay went to Paris, where he and his coachman, who had also been bitten at the same time, underwent that curious treatment with which the name of the illustrious Frenchman will henceforth be inseparably connected. The patients returned home apparently well. Unfortunately, after a time the master became ill and developed hydrophobia, and in a few days passed away, adding another to the long list of failures that have thrown such increasing discredit on Pasteur's treatment of hydrophobia. The man, much younger than his master, keeps well, though, by the way, age has little to do with the development and course of the disease. Lord Doneraile's was the ninety-eighth death after treatment at the hands of Pasteur.

As for the value of the treatment, that seems more doubtful than

over. The infection does not appear
to me to produce any local or consti-
tutional disturbance, and so cannot,
as far as I can understand; neutralise
or destroy any virus in the system. "In
"hydrophobia," said Sir James Paget
in a recent Norton lecture, at the College
Surgeons, there is a specific virus,
inoculable, probably a microbe, it
everywhere diffused, in the person or
animal, in whom it has been inserted
as in the saliva; and this matter
may continue during good health, but, at
last, it produces definite disease at
the appropriate nervous centre." The
virus injected in Pasteur's treatment
intended to penetrate the system
and destroy the hydrophobic germs,
whether it does so, others must decide.



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certainly the terrible neurology of M. Pasteur seems to show that something wrong somewhere. Wishing to get the most recent scientific opinion on the subject, I wrote to Dr. Thomas Michael Nolan, the very distinguished editor of the Provincial Medical Journal. His words are strong, and are dated Feb. 11, 1890. "I am satisfied", he writes, "that 'M. Pasteur' has not only not diminished the average death-rate from hydrophobia in any part of the world, but by his intensive process he has increased it, by introducing a new disease in man, paratyphoid hydrophobia."

When I noticed that, though the patients were drawn from a large area, most were French, and not a few from Paris, or the district, I felt that



one might doubt whether the majority
 of the dogs that had inflicted the bites
 were rabid. It must not, however, be for-
 gotten that, though hydrophobia is often
 nervous complaint - in other words
 many of its victims die of terror - it is
 possible that some of the more nervous
 people treated by Pasteur have been
 saved from death. This confidence in
 the value of the treatment must vanish
 if numerous cases are published of well-
 marked hydrophobia following on the
 treatment, and deaths from dread of
 hydrophobia will again be as common as
 ever. "I also heard Pasteur speak of the
 estimable good & thorough belief in
 cure for rabies was certain to affect
 the nerves of many persons were so
 shattered by fear, that, although the



th were inflicted on them by non-rabies
 dogs, they died a painful death as
 though a virus in the canine saliva
 had got into their blood"

I am, as the Russian physician men-
 tioned, that great clearing
 away of mystery, will show Pasteur's
 world-wide reputation, and the way in
 which hydrophobia appeals to the imagi-
 nation, in fact account for the crowds
 attracted to his rooms, more particularly
 the treatment is free, and no applicants
 turned away, or has any fee or charge
 meet.

Believe me, H. Crespi





